

Detailed Characterization of a Spreading Saline Patch Inside a Paddy Field of Northeast Thailand.

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Abstract

In Northeast Thailand, large areas of lowlying paddy fields are subjected to soil degradation via excess salt content, which affects rice cultivation. This process is mainly attributed to the rising of saline aquifers due to prior deforestation, in a geological context, including large amounts of evaporites. In discharge areas, extreme situations have developed with an accumulation of continuous salt crusts and land has been abandoned. The paper reveals that the local occurrence of saline crusts in the dry season could be linked to geological heterogeneity, aquifer levels, the proximity of an impermeable layer at the soil profile scale, and agricultural practices. If agricultural practices can lead to heterogeneity from one field to the other, they can hardly be considered as a distribution factor of salinity inside the same field where practices are homogenous. Geological heterogeneity of material can be found at very local scales especially in lowlying conditions, but do not explain why for the same quality of underground water and the same aquifer level, salt surface contents can vary in the soil within a distance of a few meters. If the presence of saline crusts is evidence of soil degradation by salinity phenomena at a field scale, little is known about the internal distribution of salinity in the soil in connection with surface phenomena. The objectives of the present work were to study the soil spatial characteristics linked to an area of saline crusts and to examine the reasons for the spreading of salt crusts in conditions where agricultural practices and aquifer salinity are homogeneous.



**The Second International Conference on
Soil Quality Evolution Mechanism and
Sustainable Use of Soil Resources**

**Soil Quality ,
Environment and Sustainable Agriculture
in Tropical and Subtropical Regions**

Yingtian, P. R. China
23 — 25 September 2003

Organizer:

Key Basic Research Develop Foundation (973 Project) No. G19990118

The Institute of Soil Science, CAS, Nanjing, China

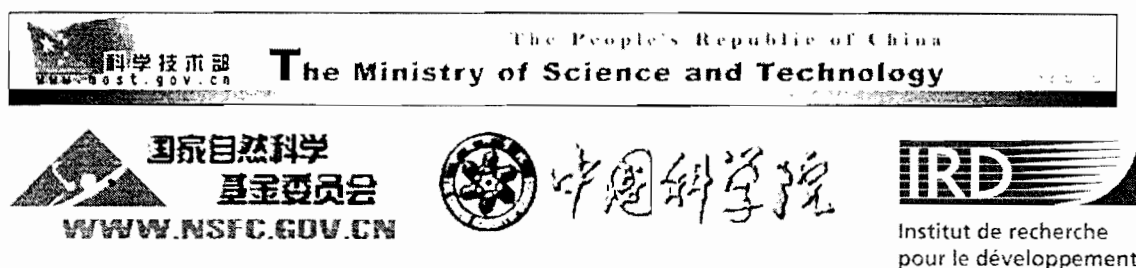
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